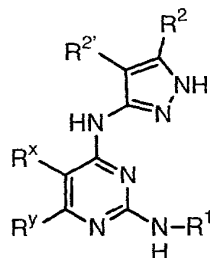


We claim:

1. A compound of formula **IIIc**:



IIIc

or a pharmaceutically acceptable derivative or prodrug thereof, wherein:

R^x and R^y are independently selected from $T-R^3$ or $L-Z-R^3$;

R^1 is $T-(\text{Ring D})$;

Ring D is a 5-7 membered monocyclic ring or 8-10 membered bicyclic ring selected from aryl, heteroaryl, heterocyclyl or carbocyclyl, said heteroaryl or heterocyclyl ring having 1-4 ring heteroatoms selected from nitrogen, oxygen or sulfur, wherein Ring D is substituted at any substitutable ring carbon by oxo, $T-R^5$, or $V-Z-R^5$, and at any substitutable ring nitrogen by $-R^4$;

T is a valence bond or a C_{1-4} alkylidene chain;

Z is a C_{1-4} alkylidene chain;

L is $-O-$, $-S-$, $-SO-$, $-SO_2-$, $-N(R^6)SO_2-$, $-SO_2N(R^6)-$, $-N(R^6)-$, $-CO-$, $-CO_2-$, $-N(R^6)CO-$, $-N(R^6)C(O)O-$, $-N(R^6)CON(R^6)-$, $-N(R^6)SO_2N(R^6)-$, $-N(R^6)N(R^6)-$, $-C(O)N(R^6)-$, $-OC(O)N(R^6)-$, $-C(R^6)_2O-$, $-C(R^6)_2S-$, $-C(R^6)_2SO-$, $-C(R^6)_2SO_2-$, $-C(R^6)_2SO_2N(R^6)-$, $-C(R^6)_2N(R^6)-$,

$-C(R^6)_2N(R^6)C(O)-$, $-C(R^6)_2N(R^6)C(O)O-$, $-C(R^6)=NN(R^6)-$,
 $-C(R^6)=N-O-$, $-C(R^6)_2N(R^6)N(R^6)-$, $-C(R^6)_2N(R^6)SO_2N(R^6)-$, or
 $-C(R^6)_2N(R^6)CON(R^6)-$;

R^2 and $R^{2'}$ are independently selected from $-R$, $-T-W-R^6$, or
 R^2 and $R^{2'}$ are taken together with their intervening
atoms to form a fused, 5-8 membered, unsaturated or
partially unsaturated, ring having 0-3 ring heteroatoms
selected from nitrogen, oxygen, or sulfur, wherein each
substitutable carbon on said fused ring formed by R^2
and $R^{2'}$ is substituted by halo, oxo, $-CN$, $-NO_2$, $-R^7$, or
 $-V-R^6$, and any substitutable nitrogen on said ring
formed by R^2 and $R^{2'}$ is substituted by R^4 ;

R^3 is selected from $-R$, $-halo$, $-OR$, $-C(=O)R$, $-CO_2R$,
 $-COCOR$, $-COCH_2COR$, $-NO_2$, $-CN$, $-S(O)R$, $-S(O)_2R$, $-SR$,
 $-N(R^4)_2$, $-CON(R^7)_2$, $-SO_2N(R^7)_2$, $-OC(=O)R$, $-N(R^7)COR$,
 $-N(R^7)CO_2(C_{1-6} \text{ aliphatic})$, $-N(R^4)N(R^4)_2$, $-C=NN(R^4)_2$,
 $-C=N-OR$, $-N(R^7)CON(R^7)_2$, $-N(R^7)SO_2N(R^7)_2$, $-N(R^4)SO_2R$, or
 $-OC(=O)N(R^7)_2$;

each R is independently selected from hydrogen or an
optionally substituted group selected from C_{1-6}
aliphatic, C_{6-10} aryl, a heteroaryl ring having 5-10
ring atoms, or a heterocyclyl ring having 5-10 ring
atoms;

each R^4 is independently selected from $-R^7$, $-COR^7$,
 $-CO_2(\text{optionally substituted } C_{1-6} \text{ aliphatic})$, $-CON(R^7)_2$,
or $-SO_2R^7$;

each R^5 is independently selected from $-R$, halo, $-OR$,
 $-C(=O)R$, $-CO_2R$, $-COCOR$, $-NO_2$, $-CN$, $-S(O)R$, $-SO_2R$, $-SR$,
 $-N(R^4)_2$, $-CON(R^4)_2$, $-SO_2N(R^4)_2$, $-OC(=O)R$, $-N(R^4)COR$,
 $-N(R^4)CO_2(\text{optionally substituted } C_{1-6} \text{ aliphatic})$,
 $-N(R^4)N(R^4)_2$, $-C=NN(R^4)_2$, $-C=N-OR$, $-N(R^4)CON(R^4)_2$,
 $-N(R^4)SO_2N(R^4)_2$, $-N(R^4)SO_2R$, or $-OC(=O)N(R^4)_2$;

Publ. No. 2,652,201

V is -O-, -S-, -SO-, -SO₂-, -N(R⁶)SO₂-, -SO₂N(R⁶)-,
 -N(R⁶)-, -CO-, -CO₂-, -N(R⁶)CO-, -N(R⁶)C(O)O-,
 -N(R⁶)CON(R⁶)-, -N(R⁶)SO₂N(R⁶)-, -N(R⁶)N(R⁶)-,
 -C(O)N(R⁶)-, -OC(O)N(R⁶)-, -C(R⁶)₂O-, -C(R⁶)₂S-,
 -C(R⁶)₂SO-, -C(R⁶)₂SO₂-, -C(R⁶)₂SO₂N(R⁶)-, -C(R⁶)₂N(R⁶)-,
 -C(R⁶)₂N(R⁶)C(O)-, -C(R⁶)₂N(R⁶)C(O)O-, -C(R⁶)=NN(R⁶)-,
 -C(R⁶)=N-O-, -C(R⁶)₂N(R⁶)N(R⁶)-, -C(R⁶)₂N(R⁶)SO₂N(R⁶)-, or
 -C(R⁶)₂N(R⁶)CON(R⁶)-;

W is -C(R⁶)₂O-, -C(R⁶)₂S-, -C(R⁶)₂SO-, -C(R⁶)₂SO₂-,
 -C(R⁶)₂SO₂N(R⁶)-, -C(R⁶)₂N(R⁶)-, -CO-, -CO₂-,
 -C(R⁶)OC(O)-, -C(R⁶)OC(O)N(R⁶)-, -C(R⁶)₂N(R⁶)CO-,
 -C(R⁶)₂N(R⁶)C(O)O-, -C(R⁶)=NN(R⁶)-, -C(R⁶)=N-O-,
 -C(R⁶)₂N(R⁶)N(R⁶)-, -C(R⁶)₂N(R⁶)SO₂N(R⁶)-,
 -C(R⁶)₂N(R⁶)CON(R⁶)-, or -CON(R⁶)-;

each R⁶ is independently selected from hydrogen or an optionally substituted C₁₋₄ aliphatic group, or two R⁶ groups on the same nitrogen atom are taken together with the nitrogen atom to form a 5-6 membered heterocyclyl or heteroaryl ring; and

each R⁷ is independently selected from hydrogen or an optionally substituted C₁₋₆ aliphatic group, or two R⁷ on the same nitrogen are taken together with the nitrogen to form a 5-8 membered heterocyclyl or heteroaryl ring.

2. The compound according to claim 1, wherein said compound has one or more features selected from the group consisting of:

- (a) R^x is hydrogen, alkyl- or dialkylamino, acetamido, or a C₁₋₄ aliphatic group;
- (b) R^y is T-R³ or L-Z-R³, wherein T is a valence bond or a methylene and R³ is -R, -N(R⁴)₂, or -OR;

- (c) R^1 is T-(Ring D), wherein T is a valence bond or a methylene unit;
- (d) Ring D is a 5-7 membered monocyclic or an 8-10 membered bicyclic aryl or heteroaryl ring; and
- (e) R^2 is -R or -T-W- R^6 and $R^{2'}$ is hydrogen, or R^2 and $R^{2'}$ are taken together to form an optionally substituted benzo ring.

3. The compound according to claim 2, wherein:

- (a) R^x is hydrogen, alkyl- or dialkylamino, acetamido, or a C_{1-4} aliphatic group;
- (b) R^y is T- R^3 or L-Z- R^3 , wherein T is a valence bond or a methylene and R^3 is -R, -N(R^4)₂, or -OR;
- (c) R^1 is T-(Ring D), wherein T is a valence bond or a methylene unit;
- (d) Ring D is a 5-7 membered monocyclic or an 8-10 membered bicyclic aryl or heteroaryl ring; and
- (e) R^2 is -R or -T-W- R^6 and $R^{2'}$ is hydrogen, or R^2 and $R^{2'}$ are taken together to form an optionally substituted benzo ring.

4. The compound according to claim 2, wherein said compound has one or more features selected from the group consisting of:

- (a) R^y is T- R^3 or L-Z- R^3 wherein T is a valence bond or a methylene and R^3 is selected from -R, -OR, or -N(R^4)₂, wherein R is selected from C_{1-6} aliphatic, or 5-6 membered heterocyclyl, phenyl, or 5-6 membered heteroaryl;
- (b) R^1 is T-(Ring D), wherein T is a valence bond;
- (c) Ring D is a 5-6 membered monocyclic or an 8-10 membered bicyclic aryl or heteroaryl ring;

- (d) R^2 is -R and $R^{2'}$ is hydrogen, wherein R is selected from hydrogen, C_{1-6} aliphatic, phenyl, a 5-6 membered heteroaryl ring, or a 5-6 membered heterocyclic ring; and
- (e) L is -O-, -S-, or $-N(R^4)-$.

5. The compound according to claim 4, wherein:

- (a) R^y is $T-R^3$ or $L-Z-R^3$ wherein T is a valence bond or a methylene and R^3 is selected from -R, -OR, or $-N(R^4)_2$, wherein R is selected from C_{1-6} aliphatic, or 5-6 membered heterocyclyl, phenyl, or 5-6 membered heteroaryl;
- (b) R^1 is $T-(\text{Ring D})$, wherein T is a valence bond;
- (c) Ring D is a 5-6 membered monocyclic or an 8-10 membered bicyclic aryl or heteroaryl ring;
- (d) R^2 is -R and $R^{2'}$ is hydrogen, wherein R is selected from hydrogen, C_{1-6} aliphatic, phenyl, a 5-6 membered heteroaryl ring, or a 5-6 membered heterocyclic ring; and
- (e) L is -O-, -S-, or $-N(R^4)-$.

6. The compound according to claim 4, wherein said compound has one or more features selected from the group consisting of:

- (a) R^x is hydrogen methyl, ethyl, propyl, cyclopropyl, isopropyl, methylamino or acetimido;
- (b) R^y is selected from 2-pyridyl, 4-pyridyl, pyrrolidinyl, piperidinyl, morpholinyl, piperazinyl, methyl, ethyl, cyclopropyl, isopropyl, t-butyl, alkoxyalkylamino, alkoxyalkyl, alkyl- or dialkylamino, alkyl- or

dialkylaminoalkoxy, acetamido, optionally substituted phenyl, or methoxymethyl;

- (c) R^1 is T-(Ring D), wherein T is a valence bond and Ring D is a 5-6 membered aryl or heteroaryl ring, wherein Ring D is optionally substituted with one to two groups selected from -halo, -CN, -NO₂, -N(R⁴)₂, optionally substituted C₁₋₆ aliphatic group, -OR, -CO₂R, -CONH(R⁴), -N(R⁴)COR, -N(R⁴)SO₂R, -N(R⁶)COCH₂CH₂N(R⁴)₂, or -N(R⁶)COCH₂CH₂CH₂N(R⁴)₂; and
- (d) R^2 is hydrogen or a substituted or unsubstituted C₁₋₆ aliphatic, and L is -O-, -S-, or -NH-.

7. The compound according to claim 6, wherein:

- (a) R^x is hydrogen methyl, ethyl, propyl, cyclopropyl, isopropyl, methylamino or acetimido;
- (b) R^y is selected from 2-pyridyl, 4-pyridyl, pyrrolidinyl, piperidinyl, morpholinyl, piperazinyl, methyl, ethyl, cyclopropyl, isopropyl, t-butyl, alkoxyalkylamino, alkoxyalkyl, alkyl- or dialkylamino, alkyl- or dialkylaminoalkoxy, acetamido, optionally substituted phenyl, or methoxymethyl;
- (c) R^1 is T-(Ring D), wherein T is a valence bond and Ring D is a 5-6 membered aryl or heteroaryl ring, wherein Ring D is optionally substituted with one to two groups selected from -halo, -CN, -NO₂, -N(R⁴)₂, optionally substituted C₁₋₆ aliphatic group, -OR, -CO₂R, -CONH(R⁴), -N(R⁴)COR, -N(R⁴)SO₂R, -N(R⁶)COCH₂CH₂N(R⁴)₂, or -N(R⁶)COCH₂CH₂CH₂N(R⁴)₂; and

- (d) R² is hydrogen or a substituted or unsubstituted C₁₋₆ aliphatic, and L is -O-, -S-, or -NH-.

8. A compound selected from the group consisting of:

(5-Methyl-2*H*-pyrazol-3-yl) - (6-phenyl-2-phenylamino-pyrimidin-4-yl) - amine;

(5-Cyclopropyl-2*H*-pyrazol-3-yl) - (6-phenyl-2-phenylamino-pyrimidin-4-yl) - amine;

(5-Cyclopropyl-2*H*-pyrazol-3-yl) - [2- (3-methylphenylamino) - 6-phenyl-pyrimidin-4-yl] - amine;

[2- (4-cyanomethylphenylamino) - 6-phenyl-pyrimidin-4-yl] - (5-cyclopropyl-2*H*-pyrazol-3-yl) - amine;

(5-Cyclopropyl-2*H*-pyrazol-3-yl) - [6-phenyl-2- (pyridin-3-ylmethylamino) - pyrimidin-4-yl] - amine;

[2- (3-Chlorophenyl) amino-6- (3-nitrophenyl) - pyrimidin-4-yl] - (5-methyl-2*H*-pyrazol-3-yl) - amine;

[2- (3-Chlorophenyl) amino-6- (3,4,5-trimethoxyphenyl) - pyrimidin-4-yl] - (5-methyl-2*H*-pyrazol-3-yl) - amine;

(5-Methyl-2*H*-pyrazol-3-yl) - [2- (4-sulfamoylphenylamino) - 6- (3,4,5-trimethoxyphenyl) - pyrimidin-4-yl] - amine;

[2- (4-Chlorophenyl) amino-6-methyl-pyrimidin-4-yl] - [5- (furan-2-yl) - 2*H*-pyrazol-3-yl] - amine;

[2- (Benzimidazol-2-ylamino-) 6-ethyl-pyrimidin-4-yl] - (5-methyl-2*H*-pyrazol-3-yl) - amine;

[2- (4-Chlorophenyl) amino-6-methyl-pyrimidin-4-yl] - (5-phenyl-2*H*-pyrazol-3-yl) - amine;

[2- (4-Chlorophenyl) amino-6-ethyl-pyrimidin-4-yl] - (5-methyl-2*H*-pyrazol-3-yl) - amine;

(5-*tert*-Butyl-2*H*-pyrazol-3-yl) - [2- (3-chlorophenyl) amino-6- (3-nitrophenyl) - pyrimidin-4-yl] - amine;

[2-(3-Chlorophenyl)amino-6-(3-nitrophenyl)-pyrimidin-4-yl]-(5-phenyl-2H-pyrazol-3-yl)-amine;

[5-(Furan-2-yl)-2H-pyrazol-3-yl]-(6-phenyl-2-phenylamino-pyrimidin-4-yl)-amine;

[2-(Benzimidazol-2-ylamino)-6-methyl-pyrimidin-4-yl]-(5-phenyl-2H-pyrazol-3-yl)-amine;

[2-(Benzimidazol-2-ylamino)-6-methyl-pyrimidin-4-yl]-(5-(Furan-2-yl)-2H-pyrazol-3-yl)-amine;

[2-(4-Chlorophenylamino)-6-methyl-pyrimidin-4-yl]-(5-methyl-2H-pyrazol-3-yl)-amine;

[2-(4-Chlorophenyl)amino-5,6-dimethyl-pyrimidin-4-yl]-(5-methyl-2H-pyrazol-3-yl)-amine;

(5,6-Dimethyl-2-phenylamino-pyrimidin-4-yl)-(5-methyl-2H-pyrazol-3-yl)-amine;

[2-(4-Chlorophenyl)amino-6-methoxymethyl-pyrimidin-4-yl]-(5-methyl-2H-pyrazol-3-yl)-amine;

[2-(Benzimidazol-2-ylamino)-6-methoxymethyl-pyrimidin-4-yl]-(5-methyl-2H-pyrazol-3-yl)-amine;

(6-Methoxymethyl-2-phenylamino-pyrimidin-4-yl)-(5-methyl-2H-pyrazol-3-yl)-amine;

(6-Methyl-2-phenylamino-pyrimidin-4-yl)-(5-methyl-2H-pyrazol-3-yl)-amine;

N^4 -(5-Cyclopropyl-1H-pyrazol-3-yl)- N^2 -(1H-indazol-5-yl)-6-methyl-pyrimidine-2,4-diamine; and

N^2 -Benzothiazol-6-yl- N^4 -(5-cyclopropyl-1H-pyrazol-3-yl)-6-methyl-pyrimidine-2,4-diamine.

9. A composition comprising a compound according to any one of claims 1-8; and a pharmaceutically acceptable carrier.

10. The composition according to claim 9, further comprising an additional therapeutic agent.

11. A method of inhibiting Aurora-2, GSK-3, or Src activity in a biological sample comprising the step of contacting said biological sample with a compound according to any one of claims 1-8.

12. A method of inhibiting Aurora-2 activity in a patient comprising the step of administering to said patient a composition according to claim 9.

13. A method of inhibiting Aurora-2 activity in a patient comprising the step of administering to said patient a composition according to claim 10.

14. A method of treating an Aurora-2-mediated disease, which method comprises administering to a patient in need of such a treatment a therapeutically effective amount of a composition according to claim 9.

15. The method according to claim 14, wherein said disease is selected from colon, breast, stomach, or ovarian cancer.

16. The method according to claim 15, wherein said method further comprises administering an additional therapeutic agent.

17. The method according to claim 16, wherein said additional therapeutic agent is a chemotherapeutic agent.

18. A method of inhibiting GSK-3 activity in a patient comprising the step of administering to said patient a composition according to claim 9.

19. A method of inhibiting GSK-3 activity in a patient comprising the step of administering to said patient a composition according to claim 10.

20. A method of method of treating a GSK-3-mediated disease, which method comprises administering to a patient in need of such a treatment a therapeutically effective amount of a composition according to claim 9.

21. The method according to claim 20, wherein said GSK-3-mediated disease is selected from diabetes, Alzheimer's disease, Huntington's Disease, Parkinson's Disease, AIDS-associated dementia, amyotrophic lateral sclerosis (ALS), multiple sclerosis (MS), schizophrenia, cardiomyocyte hypertrophy, reperfusion/ischemia, or baldness.

22. The method according to claim 21, wherein said GSK-3-mediated disease is diabetes.

23. A method of enhancing glycogen synthesis or lowering blood levels of glucose in a patient in need thereof, which method comprises administering to said patient a therapeutically effective amount of a composition according to claim 9.

24. A method of inhibiting the production of hyperphosphorylated Tau protein in a patient, which method comprises administering to a patient in need thereof a therapeutically effective amount of a composition according to claim 9.

25. A method of inhibiting the phosphorylation of β -catenin, which method comprises administering to a patient in need thereof a therapeutically effective amount of a composition according to claim 9.

26. A method of inhibiting Src activity in a patient comprising the step of administering to said patient a composition according to claim 9.

27. A method of treating a Src-mediated disease, which method comprises administering to a patient in need of such a treatment a therapeutically effective amount of a composition according to claim 9.

for reference